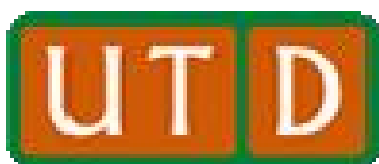


# The University of Texas at Dallas Flammable Liquid Safety Manual



# FLAMMABLE LIQUID SAFETY

## I. PURPOSE

The fire, explosion, and health hazards of handling, storing, and using flammable liquids generally can be eliminated or minimized by strict observance of safety procedures. This safety guide provides basic information applicable to most areas that use flammable or combustible liquids in their daily operations.

### A. Fire and Explosion Hazards

Many flammable liquids are volatile by nature, and it is their vapors combined with air, not the liquid, that ignite and burn. Increased temperature of a flammable liquid generally causes an increase in the rate at which vapors are evolved. Ordinarily, flammable liquid vapors are heavier than air and will settle to the lower levels, not easily diffusing with air unless there is sufficient movement of air. Explosions occur when the lower explosive limit (L.E.L.) is reached and a source of ignition is present. (L.E.L. is the minimum concentration of a flammable liquid vapor in air below which propagation of flame does not occur on contact with a source of ignition.)

### B. Health Hazards

Some flammable liquids are primary skin irritants that destroy tissue; others are skin sensitizers. An inhalation hazard exists in all cases, varying in degree in accordance with the concentration and toxicity of the vapor. Some atmospheres containing flammable vapors in concentrations below their lower explosive limit may still be harmful to health because of the vapor's toxic properties.

#### A. Minimizing Hazards

Methods of minimizing the hazards associated with flammable liquids and their vapors include:

1. Process modifications that substantially reduce the areas of exposed liquids
2. Substitution of a nonflammable or less flammable material for a low flash liquid
3. Local exhaust removal of the vapors.

#### B. Basic Principles for Safe Handling

1. Limit the quantities at any one location to those actually necessary.
2. Eliminate other possible ignition sources wherever flammable liquids are stored or used.

3. Avoid sparks from static charges generated by pouring; connect dispensing and receiving containers (if metal) by a suitable electrical conductor.
4. Use flammable chemicals in appropriately equipped areas only.
5. Prevent accumulation of vapors by careful handling and by providing adequate ventilation.
6. Use only approved containers, e.g., safety cans or metal drums, for all transportation and handling.
7. Label every storage container used for flammable liquids with the name of the material and the words: "Danger - Flammable - Keep away from heat, sparks, and open flames - Keep closed when not in use."

C. Storage Inside Building

1. Egress

Flammable or combustible liquids shall not be stored so as to limit use of exits, stairways, or areas normally used for the safe egress of people.

2. Containers

Flammable or combustible liquids should be stored in the container provided by the manufacturer. These liquids, in pure or combined forms, should be transferred to approved containers only and should be labeled to indicate the hazards.

3. Container Storage

Approved containers for flammable and combustible liquids should be stored in an explosion-proof cabinet or explosion-proof refrigerator, unless all traces of such chemicals have been removed from the container.